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Philosophical Transactions

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XVII. *Observation of the Eclipse of the Sun, the 1st of April 1764, made in Surrey street, in the Strand, London: By James Short, M. A. F. R. S.*

Read April 5, 1763. **T**HE morning of the eclipse I had provided the instruments I judged would be necessary for observing it in such a manner as to be satisfactory to the Royal Society as well as to myself. A reflecting telescope of two feet focal length, it's aperture four inches and a half, and it's magnifying power seventy times. To this telescope was fitted a micrometer with an achromic object-glass of 40 feet focal length.

The right honourable the Earl of Morton, now President of this Society, was pleased to honour me with his company, and also to observe; but in different rooms, out of sight and hearing of one another. His Lordship used a reflector of only eighteen inches focal length, four inches and a half aperture, and a power of forty times, to the eye-piece of which a helioscope was adapted, for viewing the Sun distinctly, without the least inconvenience to the eye.

The condition of the air was very unpromising, for, besides a general haziness of the sky, thin slow moving clouds were frequently passing over the Sun
from

from the South-west, so that it was by fits only that the Sun's limb could be seen distinctly. I used a smoked-glass to defend my eye, and my observations were noted down as follows.

Apparent time.
 $\begin{array}{rcl} \text{March 31, 21} & \begin{array}{c} \text{h} \\ 4 \end{array} \begin{array}{c} \text{' } \\ 33 \end{array} & \left\{ \begin{array}{l} \text{the beginning of the eclipse} \\ \text{by me.} \\ \text{by Lord Morton.} \end{array} \right. \\ & 4 \ 36 & \end{array}$

All the rest by myself, with the before mentioned micrometer.

$\begin{array}{l} \text{h} \quad \text{' } \quad \text{' } \\ 21 \quad 12 \quad 27 - 13 \quad 22, 0 = \text{distance of the cusps.} \\ \quad 14 \quad 12 - 14 \quad 32, 1 = \text{ditto.} \\ \quad 16 \quad 17 - 15 \quad 50, 8 = \text{ditto.} \\ \quad 18 \quad 1 - 16 \quad 50, 6 = \text{ditto.} \\ \quad 19 \quad 37 - 17 \quad 45, 4 = \text{ditto.} \\ \quad 48 \quad 42 - 27 \quad 7, 1 = \text{ditto.} \\ 22 \quad 19 \quad 15 - 29 \quad 33, 2 = \text{ditto.} \\ \quad 22 \quad 28 - 29 \quad 49, 5 = \left\{ \begin{array}{l} \text{Moon's diameter nearly} \\ \text{parallel to the horizon.} \end{array} \right. \\ \quad 23 \quad 58 - 29 \quad 49, 5 = \text{ditto.} \\ \quad 26 \quad 10 - 2 \quad 58, 7 = \left\{ \begin{array}{l} \text{greatest distance of Sun} \\ \text{and Moon's limbs.} \end{array} \right. \\ \quad 28 \quad 28 - 2 \quad 31, 3 = \text{ditto.} \\ \quad 30 \quad 43 - 2 \quad 26, 2 = \text{ditto.} \\ \quad 32 \quad 8 - 29 \quad 49, 5 = \left\{ \begin{array}{l} \text{Moon's diameter nearly} \\ \text{parallel to the horizon.} \end{array} \right. \\ 23 \quad 35 \quad 23 - 21 \quad 11, 4 = \text{distance of the cusps.} \\ \quad 37 \quad 33 - 20 \quad 18, 4 = \text{ditto.} \\ \quad 40 \quad 59 - 18 \quad 52, 9 = \text{ditto.} \end{array}$

The end could not be seen for clouds, but the whole of the eclipse may be determined from the above measurements.

The Sun's diameter parallel to the horizon, about an hour before noon on the day of the eclipse, was $31' 59''$, 4, air hazy. The next day at the same hour it was $31' 58''$, 6.

A D D I T I O N.

	^h	^m	^s						
April 12.	11	0	0	P. M.	Moon's diameter measured	=	32	49,	9
13.	6	30	0	P. M.	=====		=	33	8, 8
	10	25	0	P. M.	=====		=	33	20, 7 air undulating.
14.	6	30	0	P. M.	=====		=	33	21, 6
	11	0	0	P. M.	=====		=	33	39, 5 air undulating.

XVIII. *Observation of the Eclipse of the Sun, April 1, 1764: In a Letter from Dr. John Bevis, to Joseph Salvador, Esq; F. R. S.*

S I R,

Read April 5, 1764. **T**HE honour you were pleased to do me by sending me an invitation to observe the late eclipse of the Sun at your house, and the accommodations I there met with, require that I should give you the best account I can of my observation, however imperfect through the unfavourableness of the weather.

Vol. LIII.

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